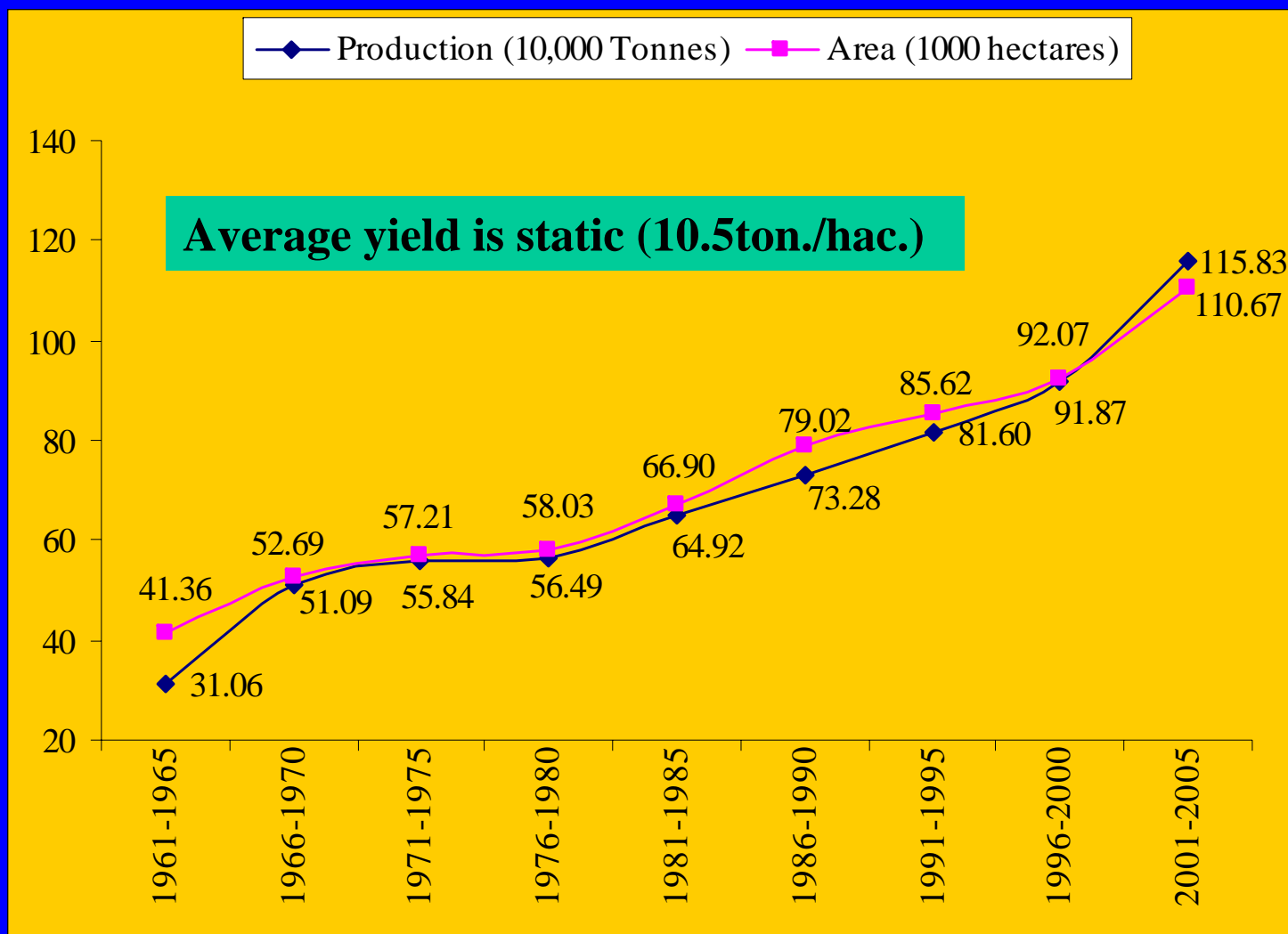


# POSTHARVEST MANAGEMENT OF MANGO: STATUS AND REQUIREMENT

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# PAKISTAN MANGO PRODUCTION



# WORLD MANGO EXPORT

- Pakistan is at 4<sup>th</sup> position by export quantity
- Shares about 9% of the world export
- World average \$643.65/tonne
- Pakistan Price \$290/tonnes

	Quantity (tonnes)	Value (\$ million)
World	908.4	584.3
Pakistan	82.1 (9.04%)	23.8 (4.07%)



# MANGO EXPORT ANALYSIS

## Average Unit Price Ranking

#	Country	Av. Unit Price (\$/ton.)	#	Country	Av. Unit Price (\$/ton.)
1	France	1676.88	11	Senegal	644.54
2	Belgium	1378.14	12	Yemen	598.05
3	Netherlands	1170.22	13	India	595.95
4	Côte d'Ivoire	1165.45	14	Brazil	578.37
5	Philippines	1032.89	15	Mexico	511.96
6	China	962.50	16	Israel	499.71
7	South Africa	830.33	17	Thailand	478.14
8	Haiti	829.51	18	Ecuador	441.57
9	Peru	720.89	<b>19</b>	<b>Pakistan</b>	<b>289.78</b>
10	Costa Rica	671.58	20	Guatemala	212.94



# AVG. POSTHARVEST LOSSES IN MANGO

(Quantity: 000 tonnes; Value: \$ million)

Fruit	Production ( <sup>000</sup> tonnes)	Value (\$ million)	Post harvest losses		
			%age	Quantity (000T)	Value (\$ million)
Citrus	1702.3	185	14.6	248.4	27
Mango	1034.6 (1673.4)	218	25.2	261.0 421.0	55 121
Date	625.0	130	34.6	216.3	45
Guava	531.6	110	34.5	183.6	38
Banana	142.9	28	32.1	45.9	9
Apple	315.4	110	13.6	43.0	15
Others	1390	500	25.0	347.5	125
<i>All Fruits</i>	<i>5741.8</i>	<i>1281</i>	<i>24.5</i>	<i>1407.4</i>	<i>314</i>

(Ibrahim and Anwar, 2004)



**A 10% wastage reduction: extra 170000 T @ \$ 290= \$49.0 M**

# STATUS OF POSTHARVEST MANAGEMENT



# BASICS OF POSTHARVEST

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1. Maintaining quality (cosmetic, organoleptic characteristics, nutritional) and freshness
2. Shelf life extension
3. Reduction of losses along the supply chain between harvest and consumption
4. Maintain food safety



# Mango- PAKISTAN



# DESCRIPTION OF COMMERCIAL CULTIVARS

Cvs	Shape	Av. Wt. (g)	Beak	Skin thick.	Skin Colour	TSS (°Brix)	Acidity (%)	Fiber
Malda	Oblong- ish -Ovate	265.0	Slight mark	Medium	Apple Green	17.0	0.26	Scanty
Dusehri	Oblong	200.0	Very slight	Thin	Primrose Yellow	25.0	0.18	Absent
Sindhri	<b>Oblongish</b>	<b>425.0</b>	<b>Point only</b>	<b>Thin</b>	<b>Pale yellow</b>	<b>17.0</b>	<b>0.21</b>	<b>Scanty</b>
Langra	Ovalish Oblong	260.0	Prominent	Medium	Greenish Yellow	25.0	0.19	Scanty to much
Anwar Ratol	Ovate	175	Prominent	Medium	Lemon Yellow	25.0	0.18	Much
Chausa	<b>Long ovate</b>	<b>398.0</b>	<b>Slight</b>	<b>Med.</b>	<b>Canary yellow</b>	<b>27.0</b>	<b>0.16</b>	<b>Scanty to much</b>
Fajri	Obliquely Oval	415.0	Slight	Medium	Chrome Yellow	22.0	0.20	Scanty
Kala Chausa	Ovatish oblong	256.0	Less prominent	Medium	Light orange	24.0	0.16	Abunda nt
Sufaid Chausa	<b>Oblongish</b>	<b>385.0</b>	<b>Prominent</b>	<b>Med</b>	<b>Yellow</b>	<b>23.0</b>	<b>0.16</b>	<b>Much</b>

# AVAILABILITY OF MANGO IN MARKET

MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER
MALDA					
	DUSEHRI				
	SINDHRI				
	LANGRA				
	A. RATOL				
	CHAUSA				
			FAJRI		
				KALA CHAUSA	
				SUFAID CHUASA	



# ORCHARD MARKETING SYSTEM

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90% orchards are marketed by contractors.

<b>ADVANTAGES</b>	<b>DISADVANTAGES</b>
1. Farmer can devote his time to other activities of farm or choice.  2. Marketing specialist market the fruits.	Plant protection is usually affected.  Farmer remained unaware of individual plant needs.



# HARVEST PROCEDURE

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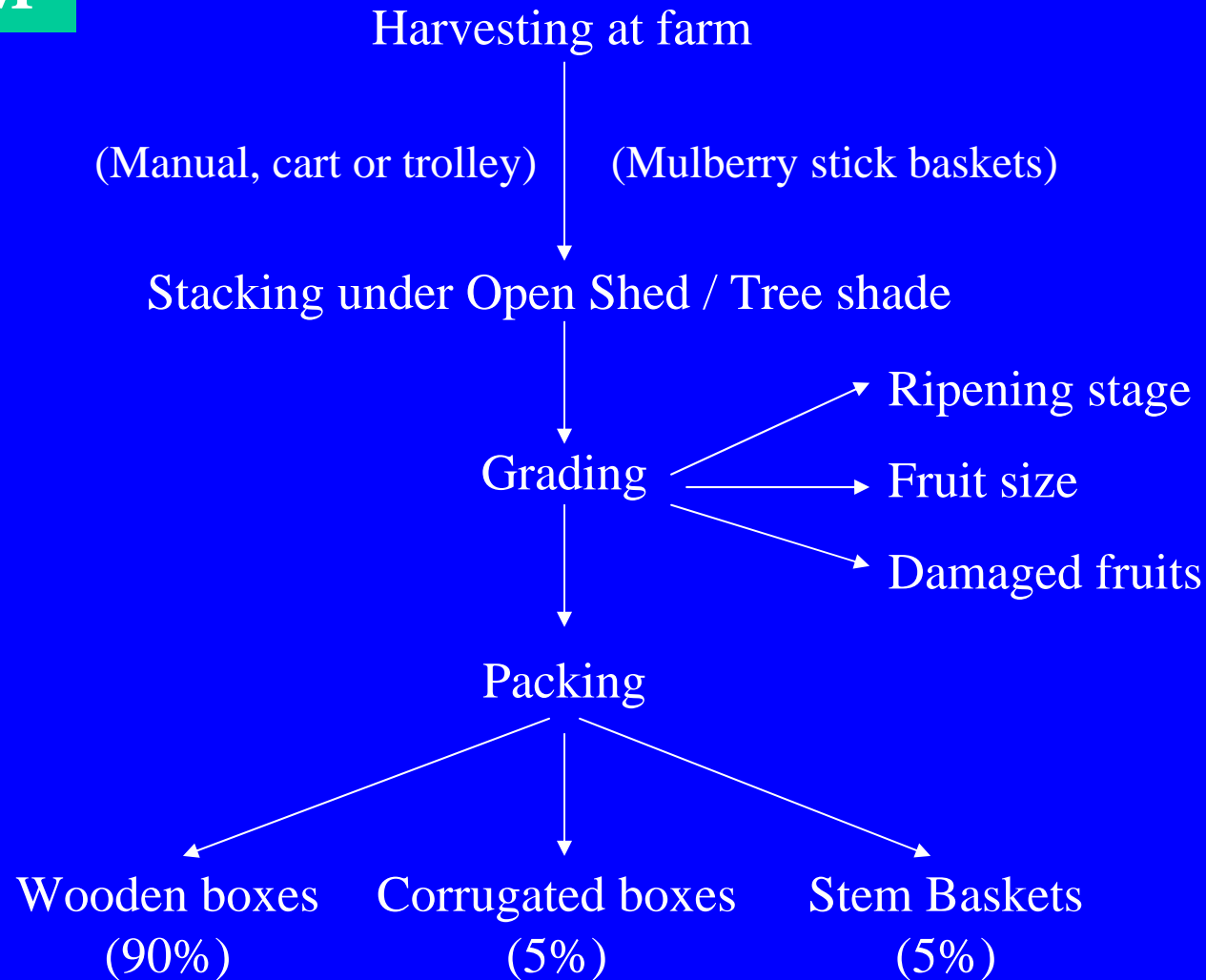
99% mango orchards are being harvested manually with or without picking pole which causes tremendous postharvest hazards:

- Physical Damage
- Bruising
- Sap burn injury.



# POSTHARVEST HANDLING CHAIN

## ON FARM

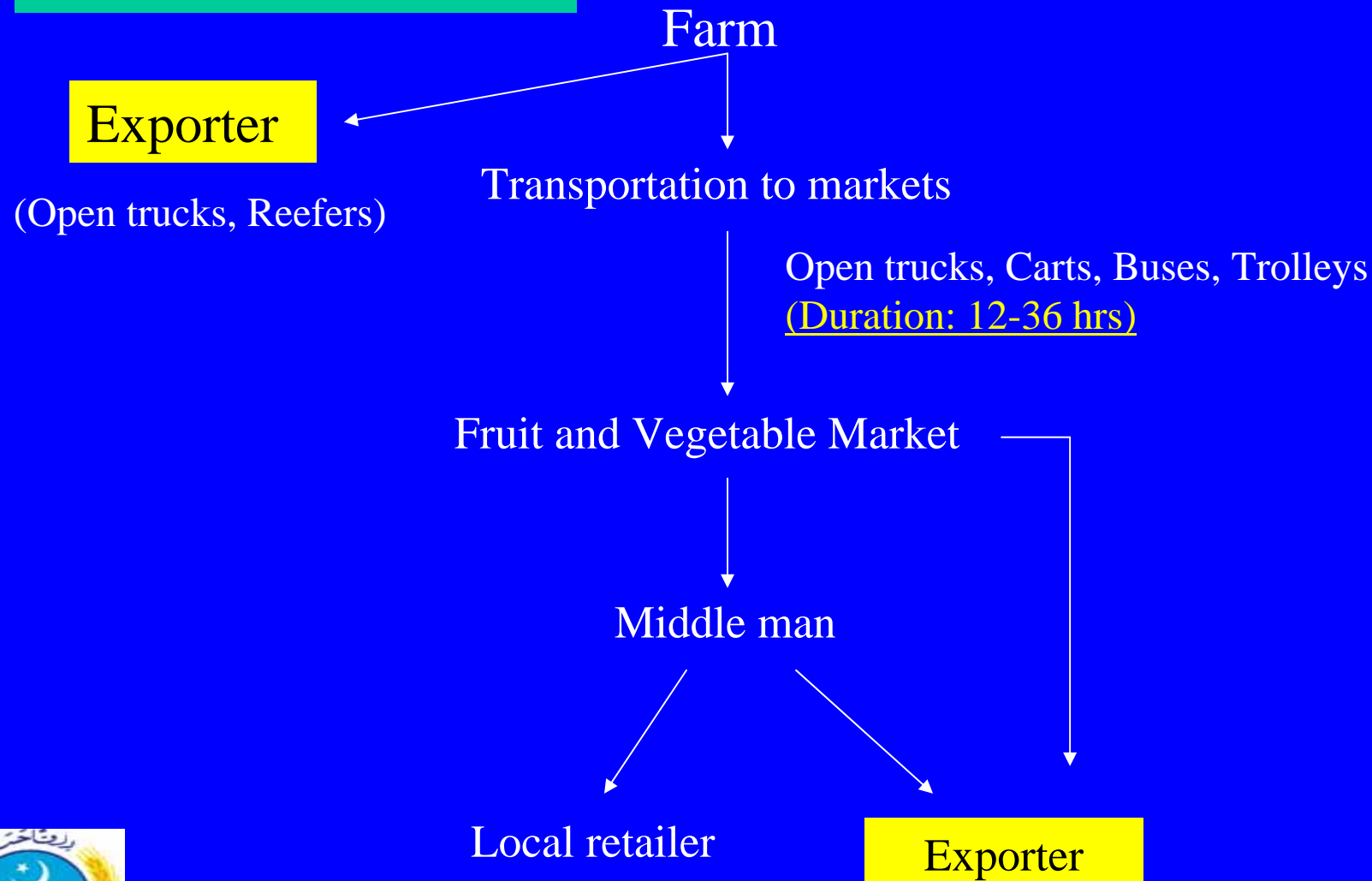


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# POSTHARVEST HANDLING CHAIN

## FARM TO MARKET



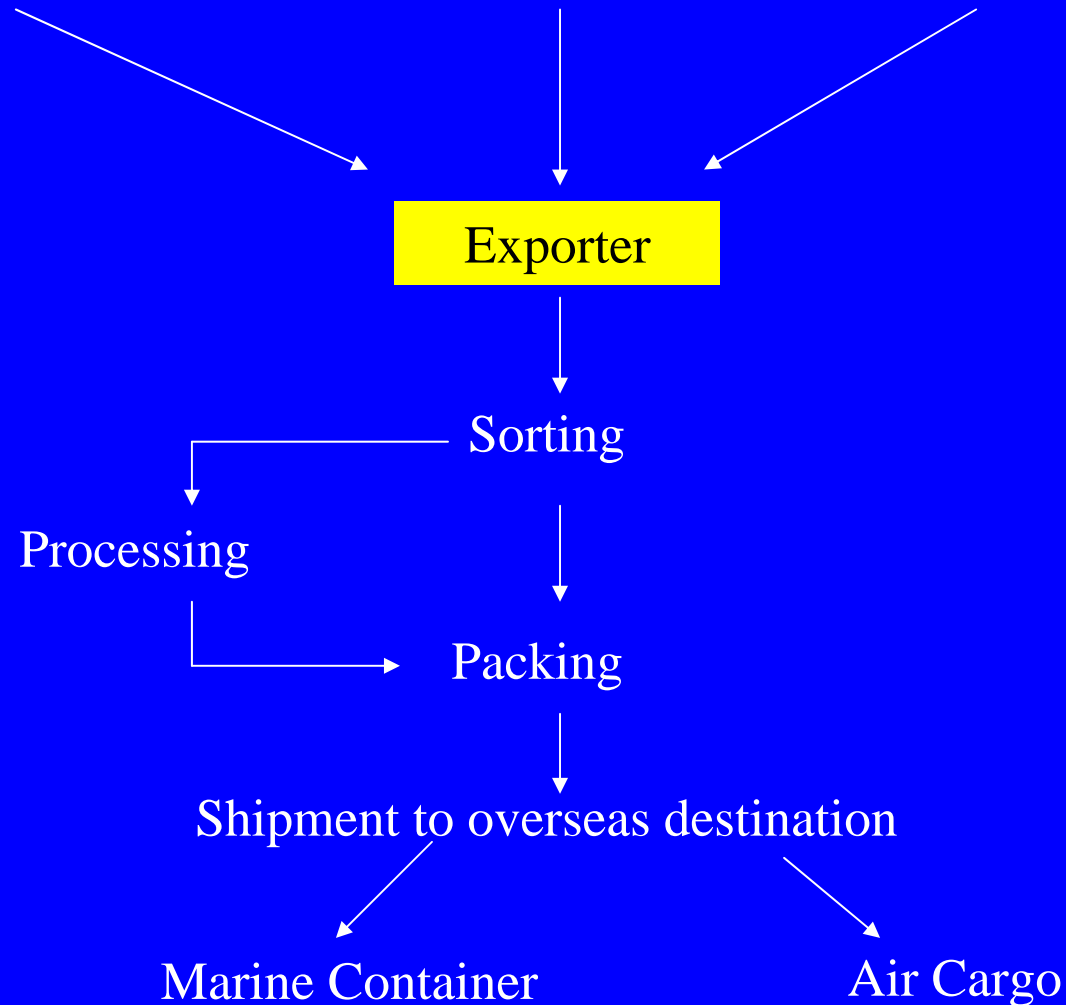
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# POSTHARVEST HANDLING CHAIN

## EXPORT

Direct from farm      Fruits and Vegetable market      Middle man



# Harvest and Post-harvest handling



# Harvest and Post-harvest handling



# POSTHARVEST SUPPLY CHAIN ISSUES

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1. Pre-mature harvesting (use of  $\text{CaC}_2$ )
2. Improper harvest techniques
3. Improper handling and transportation techniques.
4. Grading
5. Poor packing
6. Packaging materials.
7. Improper transport condition (lack of refrigerated transport).
8. Time lag between harvest & processing (up to 30 h).
9. Complexity of process (marketing)
10. Lack of postharvest research / information/training



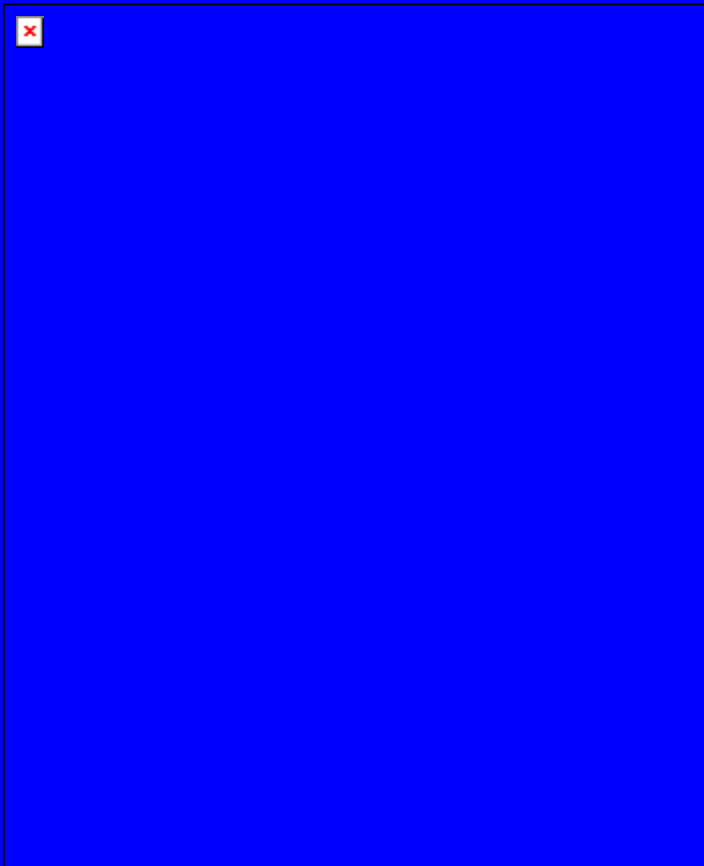
# OTHER RELATED CHALLENGES

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1. Sap burn
2. Soft nose
3. Bacterial black spot
4. Stem-end-rot
5. Anthracnose
6. Fruit fly (Quarantine concern)



# OTHER RELATED CHALLENGES



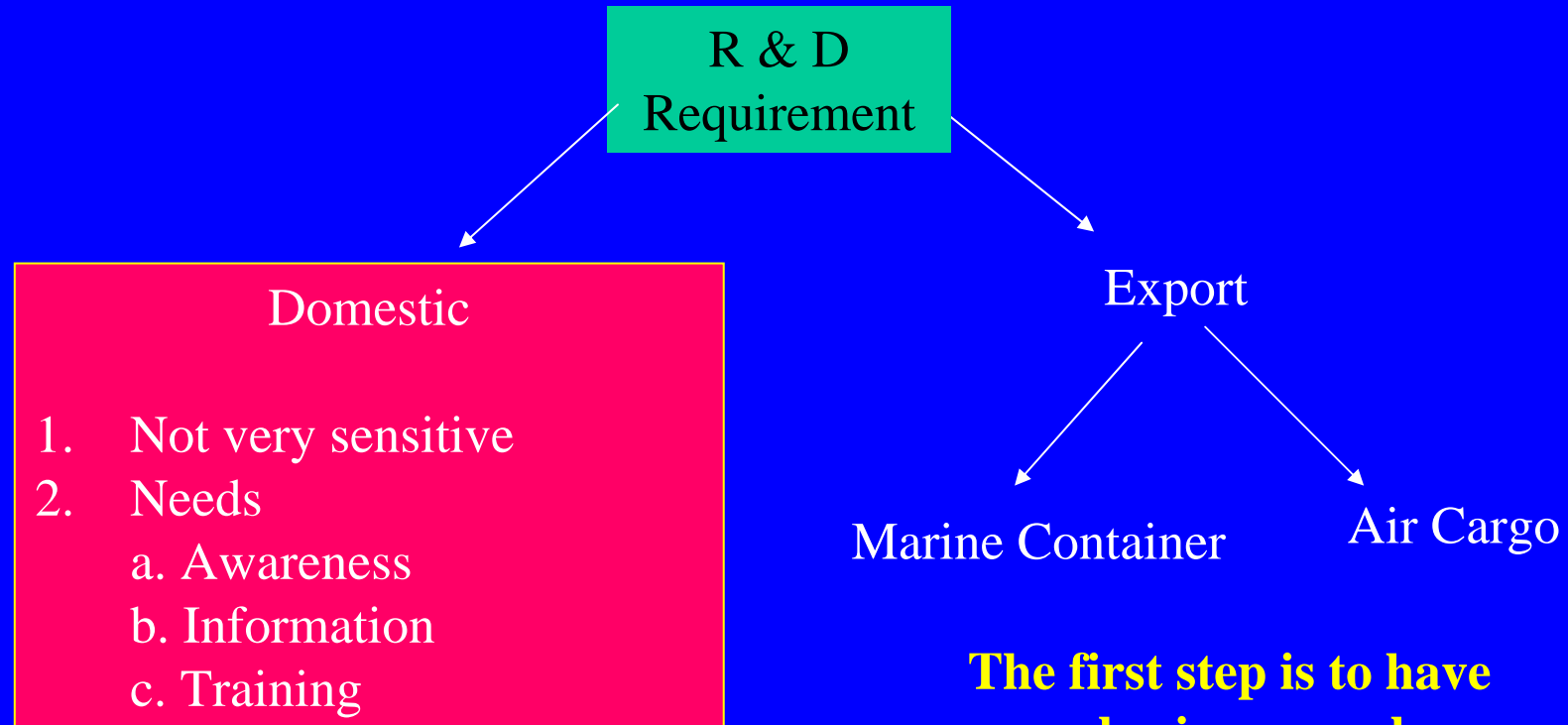
# OTHER RELATED CHALLENGES



# REQUIREMENTS



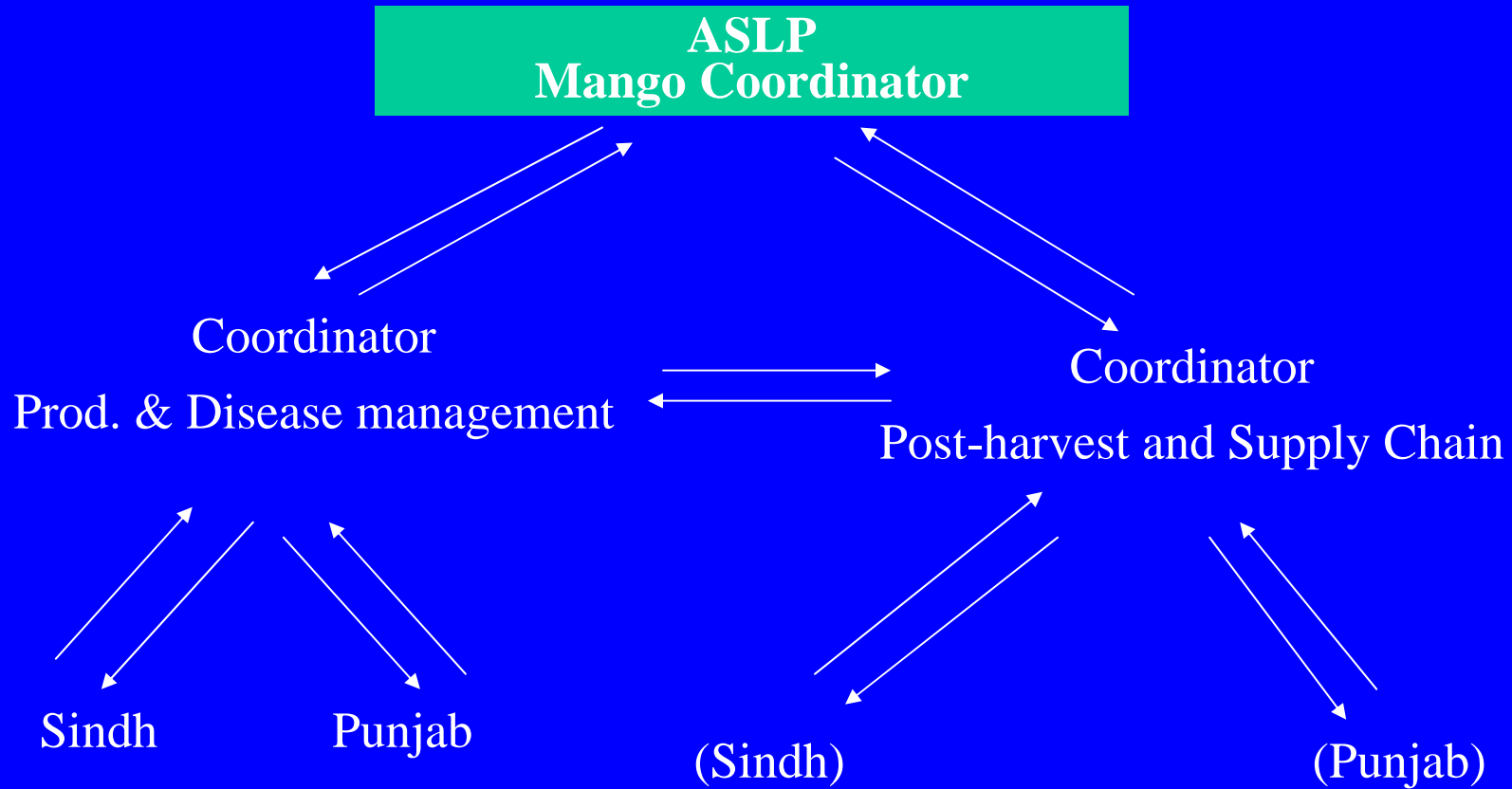
# R & D



**The first step is to have some basic research facilities (Respiration, Ethylene, temperature, humidity monitoring etc)**



# STRATEGY



# PROGRESS OF UAF

## DEVELOPING POSTHARVEST MANAGEMENT AND SEA FREIGHT TECHNOLOGY FOR EXPORT OF PRIME QUALITY MANGOES TO EUROPE AND CHINA (PHASE-I)

DECEMBER, 2005



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FUNDED BY



PAKISTAN HORTICULTURAL  
DEVELOPMENT AND EXPORT BOARD



INSTITUTE OF HORTICULTURAL SCIENCES, UAF.

# POSTHARVEST HANDLING, PROCESSING AND STORAGE

## 1. Post harvest Handling, Processing and Storage

- i. Effect of hot water treatment and storage duration on quality of mango cv Sindhri and Chaunsa
- ii. Effect of packaging on mango fruit during transit
- iii. Effect of hot water treatment on early harvested mango cv. White Chaunsa: A bench study
- iv. Optimization of cold storage temperature: A bench study



# Hot water Treatment Regimes

**China**



**Iran**



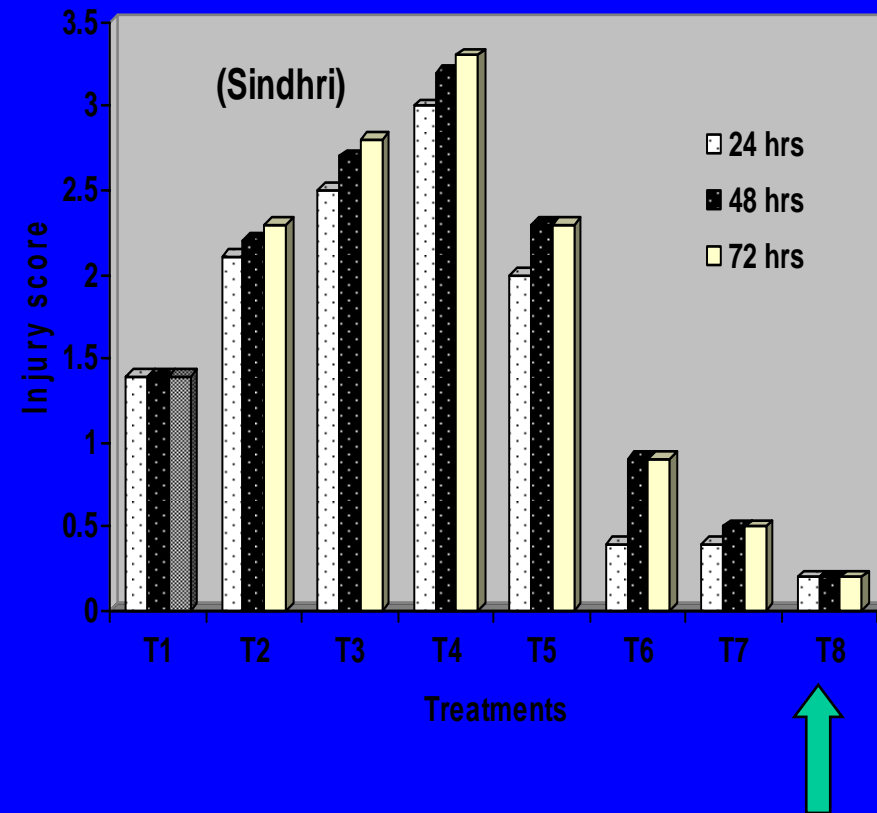
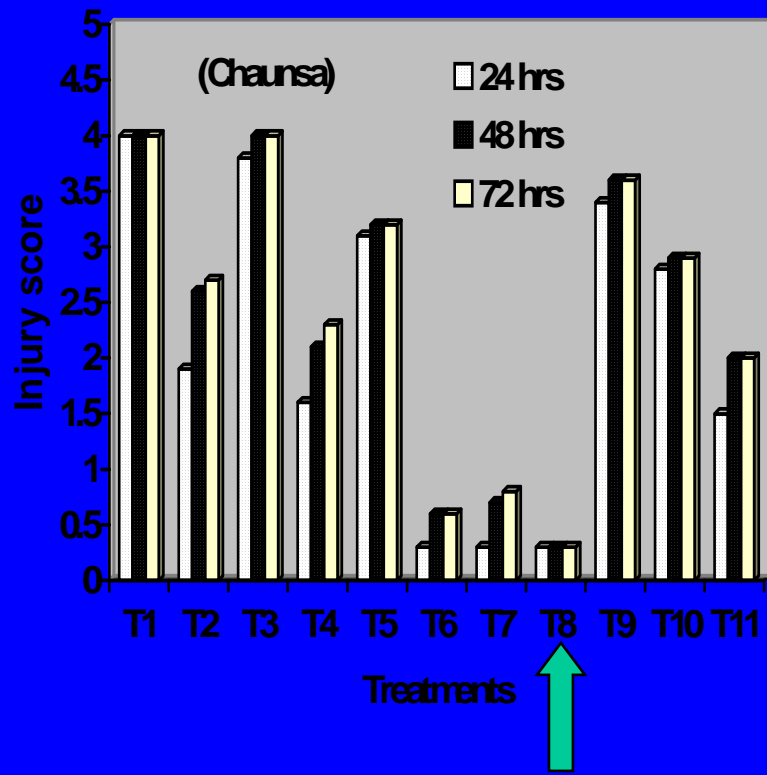
# POSTHARVEST HANDLING, PROCESSING AND STORAGE

## 2. Sap burn Management for Improving Mango Fruit Quality

- i. Effect of harvest time
- ii. Effect of de-stemming time on sap quantity
- iii. Sap burn susceptibility of different mango cvs
- iv. Effect of different chemicals on sap burn injury and fruit quality



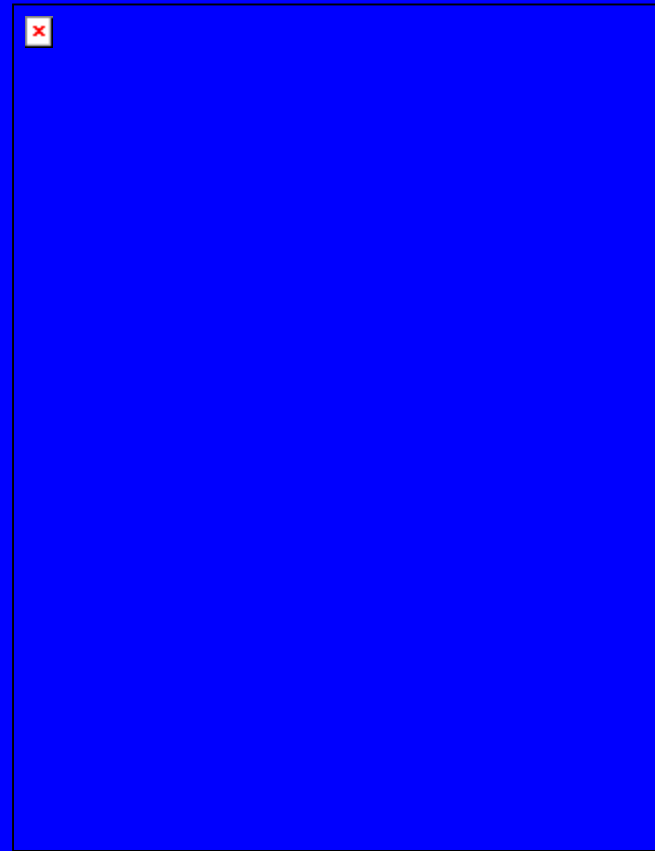
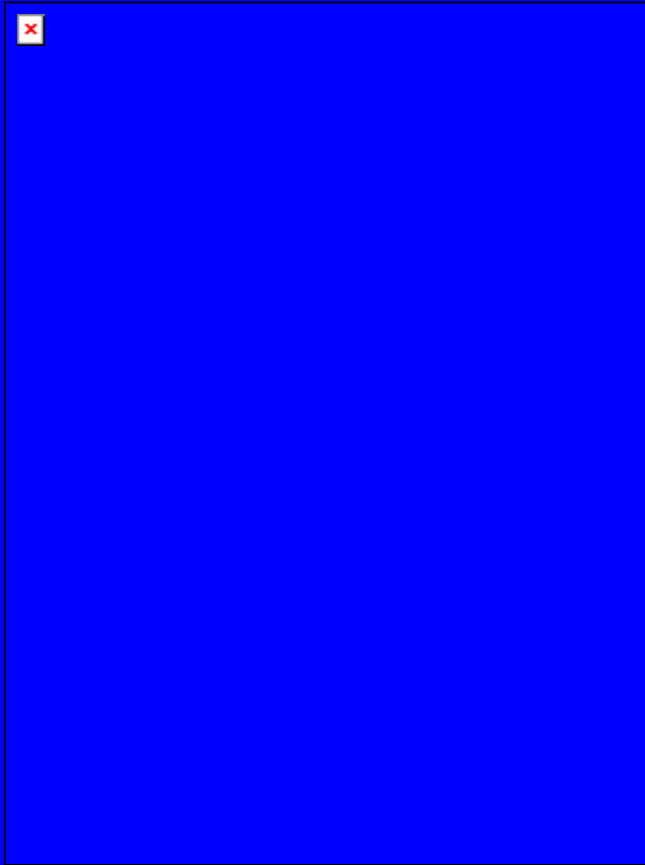
# Effect of different treatments on Sap burn injuries



# Cv Sindhri



# Cv Chunsa



# THANK YOU



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